Patent

HM-394PCT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant: August Sprock

Serial No: 09/744,485

Filed: March 12, 2001

For: METHOD AND INSTALLATION FOR PRODUCING DUAL-PHASE STEEL

Examiner: Deborah Yee

Art Unit: 1742

MAIL STOP APPEAL BRIEF-PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF

S I R:

This brief is in response to the Examiner's Answer mailed April 7, 2005.

In the Examiner's Answer, the Examiner repeats the rejection of claim 5 as being unpatentable under 35 U.S.C. §103 over the English translation of the Japanese Patent 57-104650 (JP '650) in view of the English abstract of Japanese Patent 362112732 (JP '732).

Appellant respectfully submits that this rejection of the claim is untenable and should be withdrawn for the following reasons.

As mentioned previously, claim 5 of the present application clearly teaches a method for obtaining a dual-phase structure of at least 70 to 90% ferrite and 30 to 10% martensite by using a specific two-stage cooling strategy.

At the center of this cooling strategy are the following steps:

- The first cooling stage is carried out adjusted in such a way that the cooling curve enters the ferrite area with a temperate which is still so high that the ferrite formation can take place quickly, and

- this first cooling stage is continued until at least 70% of the austenite is converted into ferrite.

Consequently, the final point of the first cooling stage is set by when the predetermined structure transformation has been reached.

In the reference JP '650, a structure transformation achieved by a two-stage cooling operation is described. In the first cooling stage, cooling was carried out slowly from a final rolling temperature T_2 of 825°C with a cooling speed C_1 of 20°C/sec. to a temperature T_3 of 600°C. The subsequent rapid cooling was then carried out with a cooling speed C_2 of 60°C/sec. to the coil temperature T_4 which - depending on the type of steel - was between 450° and 250°C.

Table 2 lists the structure components which were obtained. As shown in the table, in the steels 5 to 8, structure components were achieved which correspond to those of the present invention:

Steel No. 5 F + 15% M

Steel No. 6 F + 10% M

Steel No. 7 F + 20% M

Steel No, 8 F + 25% M

In the remaining types of steel 1 to 4 and 9, 10, which were cooled in the same manner, i.e., with the same fixedly predetermined final point T_3 of the first cooling stage, the values were significantly different.

Accordingly, it is respectfully submitted that the Examiner did not address the question as to which strategy has to be used to cool these latter types of steel in order to achieve the degree of structure transformation as is it obtained in accordance with the present invention.

Since the reference JP '650 is primarily directed to the strength development during the cooling process, this reference cannot answer this question. While the reference does point out on page 13 of the English translation that the final point T_3 of the first cooling stage is important, and may be between Ar_1 to 550°C, this is not with reference to obtaining dual-phase steels with the structure border values stated in the present application. The reference in particular does not in any way describe or disclose carrying out the first cooling stage up to the transformation of at least 70% of the austenite into ferrite.

In the meantime, Appellant has obtained the enclosed photograph of a cut surface of a sample of dual-phase steel DP 600 which was manufactured by means of the method according to the present invention by Salzgitter Flachstahl GmbH. The illustrated structure is composed to 90% of ferrite and 10% of martensite.

Appellant respectfully submits that, in view of the foregoing, it is submitted that it is clear that the rejection of claim 5 should be withdrawn.

Therefore, it is submitted that the rejection of claim 5 in the Final Office Action should be reversed.

Any additional fees or charges required at this time in connection with the application may be charged to Patent and Trademark Office Deposit Account No. 11-1835.

Respectfully submitted,

By _____

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Dated: June 7, 2005

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Board of Patent Appeals and Interferences, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on June 7, 2005.

By: _____ Date: June 7, 2005
Friedrich Kueffner

Werkstoff- und Prozessentwicklung / Salzgitter
Untersuchungs-Nr.: M_0924_05

SALZGITTER MANNESMANN FORSCHUNG
Ein Unternehmen der Salzgitter Gruppe

18.05.05

DP 600 Pr. Nr. : 621528

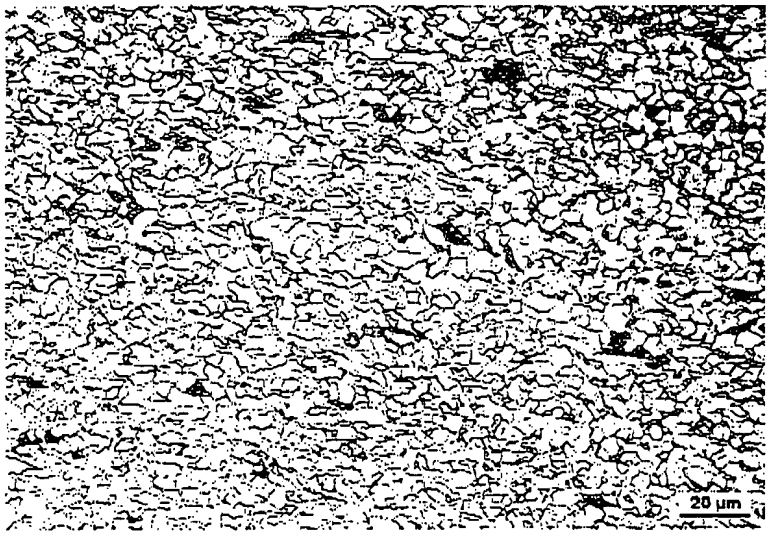

Bild 1

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Pr. Nr.: 621528

Gefüge : 90 % Ferrit
10 % Martensit
KG. : 11 - 12

HNO_3
500 : 1

Bearbeiter: Hr. Lissner